WHAT IS CLAIMED IS:

1. Volumetric flow metering device (1) for delivering a defined volumetric flow of a fluid, particularly a compressible fluid, to a load (2) at a predetermined pressure, with a supply line (32) for the fluid, a pressure gauge (33,37), a first displacement device (14,15) connected to the supply line (32), a second displacement device (13,15) connected to the first displacement device (14,15) with respect to the flow via a connecting line (35), a feed line (34) that leads from the second displacement device (13,15) to the load (2), a differential pressure measuring device (33,37) or a flowmeter (36) in the connecting line (35), and a drive unit (26,31) coupled to both displacement devices (13,14,15) in such a way that the free volumes of the two displacement devices (13,14,15) are changed by the same amount in opposite directions.

2. Volumetric flow metering device according to Claim 1, characterized by the fact that the pressure gauge (33,37) is arranged in the supply line (32) or the connecting line (34) leading to the load (2).

3. Volumetric flow metering device according to Claim 1, characterized by the fact that the first and/or the second displacement device (13,14,15) contain(s) a piston (13,14), and by the fact that a displacement piston (15) leads into the cylinder (13,14) and is sealed at one end (8) of the cylinder (13,14) such that the free volume of the cylinder (13,14) is variable.

4. Volumetric flow metering device according to Claim 1, characterized by the fact that the free width of the cylinder (13,14) is larger than the diameter of the displacement piston (15).

5. Volumetric flow metering device according to Claim 1, characterized by the fact that the displacement piston (15) has a constant cross section over its entire effective length.

6. Volumetric flow metering device according to Claim 1, characterized by the fact that the cylinder (13,14) has a constant cross section over its entire length.

7. Volumetric flow metering device according to Claim 1, characterized by the fact that the lines (32,34,35) connected to the cylinder (13,14) lead into the cylinder at different ends.

8. Volumetric flow metering device according to Claim 1, characterized by the fact that the pistons (15) of the two displacement devices (13,15;14,15) are mechanically coupled to one another.

9. Volumetric flow metering device according to Claim 1, characterized by the fact that the pistons (15) of the two displacement devices (13,15;14,15) are realized as a single piece.

10. Volumetric flow metering device according to Claim 1, characterized by the fact that the cylinders (13,14) of the two displacement devices (13,15;14,15) transition into one another, and by the fact that the displacement pistons (15) transition into one another.

11. Volumetric flow metering device according to Claim 10, characterized by the fact that the free ends (16, 17) of the common piston (15) for both displacement devices (13,15;14,15) are respectively provided with a rod (18,26) that extends through the other end (7) of the cylinder chamber (13,14) in sealed fashion.

12. Volumetric flow metering device according to Claim 1, characterized by the fact that it is accommodated in a sealed housing (41).

13. Volumetric flow metering device according to Claim 1, characterized by the fact that the drive unit (31) contains a stepper motor or a synchronous motor.

14. Volumetric flow metering device according to Claim 1, characterized by the fact that a length measuring device is provided for measuring the stroke and/or the speed of the displacement piston (15).

15. Volumetric flow metering device according to Claim 1, characterized by the fact that a shut-off valve is arranged in the connecting line (35).